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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/516,080	03/01/2000	Todd O. Bolken	MICS:0043/99-0634	3543

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Michael G Fletcher
Fletcher Yoder & Van Someren
P O Box 692289
Houston, TX 77269-2289

EXAMINER

LOUIE, WAI SING

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

09/516,080

BOLKEN, TODD O.

Examiner

Art Unit

Wai-Sing Louie

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 16-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 16-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-7, 9-14, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neu (US 5,404,255) in view of Chia et al. (US 6,081,997).

With regard to claims 1 and 19, Neu discloses an encapsulation molding equipment (col. 4, line 15 to col. 8, line 36 and fig. 6) comprising:

- A first support plate 27;
- A second support plate 53 proximately positioned with respect to the first support plate;
- A cavity plate 29 positioned between the first support plate and the second support plate, where the cavity plate 29 having an aperture 36 configured to accept only a protruding portion of the circuit package 33, where the aperture 36 is sized to create a peripheral void about only protruding portion of the circuit package 33 to permit a molding compound 60 to be disposed (fig. 9 and 10), but do not disclose the protruding portion of the circuit package contacts the first support plate 27. However, Chia et al. disclose an encapsulant injection system, where the protruding portion of the circuit package 12 contacts the first support

plate 26 so that the encapsulant would not cover the chip (Chia fig. 1). Chia et al. teach the exposed I/O pads on the chip could be attached to a printed circuit board (Chia col. 1, lines 15-30). Therefore, it would have been obvious at the time the invention was made to modify Neu's device with the teaching of Chia et al. to have the protruding portion of the circuit package contacts the first support plate in order to attach the chip package to a printed circuit board.

With regard to claim 2, Neu discloses the first support plate 27 is configured to support a plurality of circuit packages 33 (fig. 9 and 10).

With regard to claims 3-4 and 7, Neu does not disclose the first support plate 27 is made of metal. However, metal such as steel is a rigid material and is commonly used for molding equipment. Therefore, it would have been obvious to one with ordinary skill in the art to use metal to make the first support plate 27.

With regard to claim 6, Neu discloses the film 32 is comprises of copper, which is a resilient material (col. 5, lines 5-13).

With regard to claims 9 and 10, Neu discloses a plurality of push rods 45 from the first support plate, where the cavity plate push rods 45 are mechanically controlled to separate the cavity plate from the first support plate 27 (col. 6, lines 27-50 and fig. 6).

With regard to claim 11 and 12, Neu discloses rail ejection pins 64 to knocking out chip, which are mechanically controlled (col. 7, line 66 to col. 8, line 7).

With regard to claims 13 and 14, Neu discloses the second support plate 53 comprises a cavity 60, where the cavity 60 is positioned to permit a molding compound to be disposed within the cavity (fig. 1).

With regard to claim 16, Neu discloses the aperture 36 is the same height as the protruding portion of the circuit package 33 (fig. 6).

With regard to claim 17, Neu discloses the aperture 36 is configured to yield a circuit package having its non-protruding surface completely covered with a molding compound (fig. 6 and 10).

With regard to claim 18, Neu discloses the molding compound is resin, which is an insulating material (col. 7, lines 47-57).

With regard to claim 20, Neu discloses the encapsulating chip is a semiconductor chip (col. 1 line 37). A semiconductor chip could be a memory device.

Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neu (US 5,404,255) modified by Chia et al. (US 6,081,997) as applied to claim 1 above, and further in view of Miyajima (US 6,048,483).

With regard to claim 5, Neu modified by Chia et al. do not disclose a film disposed in contact with the protruding portion of the circuit package 33. However, it is well known in the art to have a release film disposed between the mold article and the support so that the article does not stick to the support plate such as the release film 334 disclosed in Miyajima (fig. 7). Therefore, it would have been obvious the have a release film in Neu's device in contact with the protruding portion of the package.

With regard to claim 8, Neu, modified by Miyajima in claim 5 above, would disclose the first support plate 332 comprises a plateau which resides adjacent a recess 338 in the cavity support plate (Miyajima fig. 6).

Response to Arguments

Applicant's arguments filed 8/28/02 have been fully considered and the followings are the response:

- Applicant points out that reference Neu (US 5,405,255) do not disclose the protruding portion of the circuit package contacts the first support plate so that the encapsulant covers the top surface of the chip during the encapsulating process (fig. 6) and the thickness of the package is thicker than the claimed invention. However, Chia et al. disclose the chip contacts the first support plate and the molding compound does not cover the top surface of the chip. Neu combined with Chia et al. meet the claimed limitations of claim 1.
- Applicant points out that Neu does not meet the claim limitations of claims 5 and 8. The claim rejections have been revised. Please see the rejections above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (703) 305-0474. The examiner can normally be reached on 7:30 AM to 4:00 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

wsl
April 16, 2003


LONG PHAM
PRIMARY EXAMINER